ECHNOLOGY DEPT.
First Copy
PUBLIC LIBRARY
OCT 20 1939
DETROIT

The AMERICAN HOROLOGIST

IN THE INTEREST OF THE HOROLOGICAL AND JEWELRY INDUSTRY

Vol. IV OCTOBER, 1939 No. 10

The AMERICAN HOROLOGIST

Contents

	Page
The Pendulum and Balance..... By Harold C. Kelly	7
Diamonds, Their Trend.....	8
Aeronautical Instrument Service	10
Legal Opinions ..... By Charles R. Rosenberg, Jr.	18
Repairing the Hour Wheel..... By W. H. Samelius	21
The Jewelry Repair Department By Col. Wm. Bright	24
The Early American Clock..... By J. F. Coleman	26
Association Activity	28
War Talk Sells Watches for Southern Dealer	31

Index to Advertisers

	Page
American Time Products, Inc...Back Cover	
Bergeon & Co.....	19
Bowman Technical School.....	12
Bradley Polytechnic Institute.....	15
Becker-Hickman Co.	12
Burt Co., Edwin B.....	29
Cosley Jewelry Co.....	29
Coleman, J. C.....	21
Elgin National Watch Co.....	6
Fulcrum Oil Co.....	25
Gluck, Martin, & Son.....	15
Hammel, Riglander & Co.....	4
Kauffman, Frank	15
Landaw Brothers	25
Longines-Wittnauer	23
Marshall Co., C. & E.....16-17	
Newall Mfg. Co.....	28
New Haven Clock Co.....	9
Paulson, Henry, & Co.....	8
Roger Mfg. Co.....	22
Sabro, Harold	25
Swartchild & Co.....	3
Watch-Motor Mainspring Co.....	5
Waltham Watch Co.....	14

THE AMERICAN HOROLOGIST

Published monthly by Roberts Publishing Company, Denver, Colorado, in the interest of Horological and Jewelry Industry. To inculcate the principles of Fraternal and Commercial Advancement; to promote the welfare and enhance the betterment of the industry; to cultivate good fellowship and a higher degree of knowledge in Horology and Jewelry industry.

•●•

PRICE

25c per copy, $2.00 per year in United States and Canada. $2.50 per year in all foreign countries. Members of U. H. A. A. receive the paper as part of their membership benefits.

•●•

CHANGE OF ADDRESS

Change of address must be made prior to 5th of month to effect the forthcoming issue of the magazine. Both old and new addresses must be given.

•●•

ADVERTISING RATES UPON REQUEST

Contributions and advertising material must be received not later than the 25th of the month preceding publication.

THE AMERICAN HOROLOGIST

Official National Publication of the United Horological Association of America, Inc., and all its affiliates, who operate as a united body toward the advancement and upliftment of the Horological and Jewelry Industry.

•●•

OFFICES AND PERSONNEL

Address all communications to THE AMERICAN HOROLOGIST, 3226 E. Colfax Ave., Denver, Colo.

Editor and Manager: Orville R. Hagans, Denver, Colo.

Circulation Manager: M. M. Hagans, Denver, Colo.

Associate Editors: Frank Foegler, Cincinnati, Ohio; Harold Sabro, Portland, Oregon; B. W. Heald, Milwaukee, Wis.

Technical Editor: W. H. Samelius, Elgin, Ill.

Assistants: Technical Board Members, National Association.

Clock Technical Editor: J. E. Coleman, Nashville, Tenn.

Staff Photographers: J. Perrine, Denver, Colo.; J. E. Coleman, Nashville, Tenn.

Eastern Advertising Manager: J. P. Sommer, 1524 Beaver Ave., N. S. Pittsburgh, Pa.

Nothing which appears in THE AMERICAN HOROLOGIST may be reprinted without special permission.

Copyright, 1939, by Orville R. Hagans

NEW FLUORESCENT MERCURY TUBE

floods entire bench with cool, glareless, fluorescent DAYLIGHT

SWARTCHILD'S

TRIUMPH

Reg. U. S. Pat. Off. No. 352,715

DAYLIGHT BENCH LAMP

This new light very closely resembles daylight, not only in color but in volume and in the large area it illuminates with less shadow, reflections, less glare and less heat.

The fluorescent mercury bulb is entirely different than the ordinary incandescent bulb. It has no filament and radiates almost no heat whatever—a factor that increases comfort for the watchmaker. The mercury tube is 18" long and produces a very powerful, diffused light, almost like daylight which illuminates the entire bench. An ideal bench lamp because it tends to reduce eyestrain and because visibility is greatly improved by its use.

An exclusive Swartchild product, substantially constructed to give lasting satisfaction. Base fastens to back of bench with a screw and extends forward only 3½". Adjustable to any position, height or angle. Aluminum reflector 18¼" long. All-metal and durably finished in bronze colored crackle enamel.

BURNS ONLY 15 WATTS

It gives more light but uses only ¼th the current of an ordinary 60-watt bulb. It will reduce your bench light cost at least 75%. Bulbs will burn about 2,000 hours and can be replaced.

TRADE IN YOUR OLD LAMP

We will allow you $1.50 for your old bench lamp—regardless of age, style, or condition—towards the purchase of a New Triumph Mercury Lamp. Old lamps sent in must be prepaid.

No. AM521663. Swartchild's New Triumph Daylight Bench Lamp, complete with Fluorescent Mercury Tube, cord and plug **$11.95**

(Or $1.20 per month for 10 months)

Swartchild's ECONOMY Fluorescent Bench Lamp

Here is a secondary bench lamp using the Fluorescent type of bulb. This lamp is not as rigidly constructed as the DeLuxe Triumph model shown above but it is equal or superior to other similar lamps on the market. Fully adjustable, dark gray crackle finish, shade 18¼" wide, employs 15-watt fluorescent tube.

For those to whom price is a primary consideration, this Swartchild Economy Fluorescent Bench Lamp is outstanding—only $8.95—and a trade-in allowance of $1.00 for your old bench lamp when sent in prepaid.

No. AM521664. Bench Lamp as described, AC only, each $8.95

$8.95

Less $1.00 Trade-in Allowance

SWARTCHILD & COMPANY

World's Largest Watchmakers' and Jewelers' Supply House

29 E. Madison St. CHICAGO | 31 W. 47th St. NEW YORK | Santa Fe Bldg. DALLAS | Volunteer Life Bldg. ATLANTA | 387 Washington St. BOSTON

SEITZ

GENUINE RUBY FRICTION JEWELS

Are As Standard in Their Field As

V. T. F. ROUND WATCH GLASSES
KENDRICK & DAVIS WATCHMAKERS' TOOLS
F. E. LINDSTROM SWEDISH PLIERS

Every Genuine Seitz Friction Jewel is guaranteed perfect and accurately gauged. An assortment in fine Mahogany Finish Cabinet is available for any requirement.

781—24 Ruby Balance Jewels and 77 Plate Jewels covering best 101 sizes.....**$12.00**

786—51 Ruby Balance Jewels —129 Plate and 3 each of 13 sizes Cap Jewels—Total 219 Jewels **$25.60**

791—82 most used Ruby Center Jewels **$21.10**

794—145 Ruby Center Jewels, covers wide range..**$34.25**

801—80 most used Ruby Balance Jewels **$14.00**

All Seitz Balance Jewels have olive holes. Seitz Friction Jewels being accurate and of perfect construction are cheapest in the long run.

HAMMEL, RIGLANDER & CO., INC.

209 West 14th Street **New York, N. Y.**

Wholesale Distributors

QUALITY STEEL
AND WORKMANSHIP
COMBINED WITH
SCIENTIFIC IMPROVEMENT OF DESIGN
MAKE

SANDSTEEL
CROSSCURVED MAINSPRINGS
THE CHOICE OF HOROLOGISTS
FROM COAST TO COAST

PATENTED MADE IN U.S.A. BY
WATCH-MOTOR MAINSPRING CO., INC.
145 HUDSON STREET, NEW YORK
A SURE SOURCE OF SUPPLY

You Will Find New Satisfaction in Your Work When You Use SANDSTEEL CROSSCURVED MAINSPRINGS They Are Reliable, Untiring Workers

ORDER NOW!

Complete Your Assortment!

Greatly Increased Demand May Delay Future Deliveries

Write for Catalog and Name of Nearest Jobber

IT'LL BE AN *"Elgin Christmas"* TO SHOUT ABOUT

. . . when you use these tie-ins

ELGIN is mailing you its complete holiday promotion material on October 16th, including actual copies of the tie-ins shown here!

For Banner Christmas Watch Sales put the tremendous force of ELGIN'S Fall advertising behind your store with these selling aids which will reach you soon . . .

Reprints of the ELGIN full-color pages in national magazines during November and December provided for your windows and counters.

Newspaper Ads. Written in a newsy, direct style. Ready to run over your name. Mats supplied *free.*

Bus and Car Cards. Designed with plenty of holiday spirit, they play up your name and your stock of gift-ELGINS for Christmas. Imprinted and supplied free.

Movies—entertainment plus effective selling in a dramatic 1-minute movie with sound to be run at your local theatre. Film available for $5.00.

Radio. Special announcements to promote your ELGINS and other gifts.

Direct Mail. Beautiful Christmas folders, imprinted with your name, address, etc. supplied at nominal cost. 2 imprinted government postal cards: one points up your new ELGINS; the other, your entire gift stock. Costs only 1c each . . . for postage.

ELGIN NATIONAL WATCH COMPANY

The Pendulum and Balance

By HAROLD C. KELLY
Member National Technical Board

WHEN investigating the general principles of timing, it will prove instructive to make comparison between the pendulum of a clock and the balance of a watch.

A physical pendulum such as we have in a clock is a body suspended from a fixed point. When a pendulum is made to swing it soon comes to rest, unless the force supplied by weight or spring through escape wheel and pallets is transferred to the pendulum, and when transferred, the pendulum will keep vibrating until the driving force is exhausted. In a somewhat similar manner the balance of a watch is kept vibrating.

Unlike the balance, the pendulum requires no special effort to bring it to its dead point of point of rest. A pendulum, when released, is compelled by gravity to fall at once to its lowest point, this being its dead point. And only for the momentum acquired in falling, it would remain at rest, but the momentum thus acquired carries it up nearly as far on the opposite side as it fell at first. The length of the swing grows less because of impeding forces until the pendulum finally comes to rest at its dead point.

The length of a pendulum (latitude and altitude considered) determines the time occupied in its vibration, a long pendulum moving slowly and a short one quickly as shown by the fact that a pendulum 39 inches long vibrates 60 times in one minute and a pendulum one-fourth as long (9¾ inches) vibrates 120 times in one minute.

The length of a pendulum is the measure of the distance between its center of suspension and the oscillation. The center of oscillation is always situated below the center of gravity or center of mass of the pendulum. It will be found sufficiently close to assume that the center of oscillation as coinciding with the middle of the pendulum bob.

The center of oscillation of a pendulum is an important point. How important is shown by the following statements: (1) If weight is added *above* center of oscillation, that is, above the middle of the pendulum bob, the clock will run faster. (2) If weight is added *below* center of oscillation the clock will run slower. (3) If weight is deducted *above* center of oscillation the clock will run slower. (4) If weight is deducted *below* center of oscillation the clock will run faster.

We shall briefly discuss our first statement (1). If weight is added above the center of oscillation (center of pendulum) the clock will gain as in this manner we have changed the center of gravity. It has the same effect as raising the pendulum.

We may summarize by stating that if by any means the center of oscillation is raised the pendulum is actually made shorter. Likewise if the center of oscillation is lowered the pendulum is actually made longer.

Thus the theoretical definition of center of oscillation reads as follows:

The center of oscillation is that point of a pendulum in which, if the whole mass of the pendulum was concentrated, the time of oscillation would not vary.

Comparison of Pendulum and Balance—We shall list herewith the principle differences between the pendulum and balance:

(1) Gravity controls a pendulum.

(2) Gravity does not control a balance that is poised, excepting whatever influence it has on the pivots.

(3) A pendulum vibrates without a hairspring.

(4) A balance must have a hairspring in order to vibrate.

(5) The time of vibration of a pendulum of given length is not affected by its mass as the action of gravity is constant.

(6) The time of vibration of a balance *is* affected by its mass, for the reason that adding mass to the balance adds nothing to the hairspring; hence the vibrations of the balance become slower.

Latitude and Gravity—Gravity may be

said to be strongest at the poles and near the center of the earth, running like a bar magnet from pole to pole.

It follows therefore that gravity would be least at the equator and it would increase in mathematical progressiveness as we approach the poles. And since the velocity of a falling body is likewise controlled by the pull of gravity it is further evident that a pendulum producing a given number of vibrations per minute at the equator would vibrate faster at the poles.

Centrifugal Force — There is another force that would cause a pendulum to vibrate slower at the equator. It is what is known as centrifugal force which may be defined as that force which would cause objects to fly off of a rapidly revolving body, such as the earth revolving on its axis.

Taking account of these forces we would find that a clock that keeps correct time at the equator would gain three minutes and forty-four seconds in twenty-four hours if it were transported to the north pole.

A clock that beats seconds would require a pendulum of varied lengths as listed below, if it were to keep correct at the following places on the earth's surface:

Equator (sea level)	39 inches
Rio de Janeiro	39.01 inches
New York	39.10 inches
London	39.14 inches
The Poles (sea level)	39.20 inches

On the other hand a watch with balance and hairspring is little affected by latitude and altitude. At least it is not affected in the same manner nor for the same reasons that the pendulum is affected.

Diamond Campaign Continues

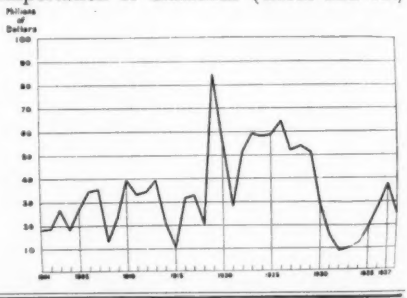
The recently announced national campaign to promote the sale of diamonds in the United States will be continued in spite of the start of the "Second World War," it was announced in a statement issued by officials of the De Beers Consolidated Mines, Ltd., of South Africa.

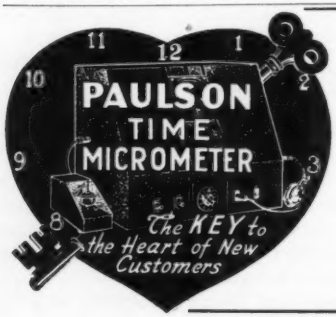
This assurance was given in reply to rumors that such a campaign was to be discontinued because of the war. The decision to "carry on," it was said, is based on the demonstrated popularity of the diamond in spite of the crisis, and indications of favorable business and financial conditions in this country.

Diamond imports in the United States, it was recalled, increased greatly during the first World War, reaching a peak in 1919.

U. S. Diamond Imports— 1901 to 1938

This chart reveals that the peak for importation of diamonds (uncut and cut,





ONLY $250.00

AND THOUSANDS ARE USING THEM

The Paulson Time Micrometer, now in its fifth year of successful performance in thousands of retail jewelry stores, not only quickly locates the trouble in the watch, speeds up your repairs at least 25% but of greater importance, it creates more business for you, builds prestige and dependability as hundreds of laudatory letters will testify. **You take no chances, satisfaction guaranteed.**

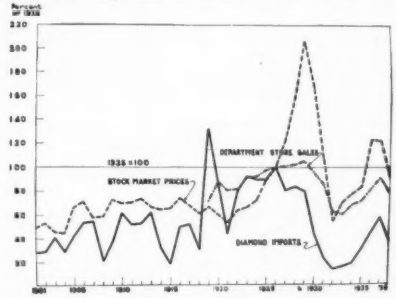
HENRY PAULSON & CO.

EXCLUSIVE DISTRIBUTOR CHICAGO

but not set) was reached in 1919, when valuation of imports reached $90,000,000. The low point was in 1932, with imports valued at less than $10,000,000. The peak was the result of several factors, not the least of which was a wave of marriages postponed during the World War.

Diamonds and the Stock Market

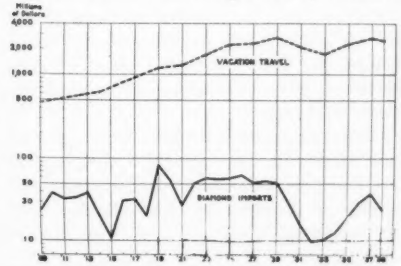
Stock market prices—as well as department store sales—are compared with diamond imports in this chart. It shows



that imports began their decline three years before the wave of post-war prosperity had reached its peak. The peak for retail diamond sales is estimated to have been in 1925.

A Contrast in Luxuries

As this chart, from the N. W. Ayer & Son, Inc., survey of the diamond market shows, vacation travel always has been far ahead of diamond imports in the United States. More significant, vacation



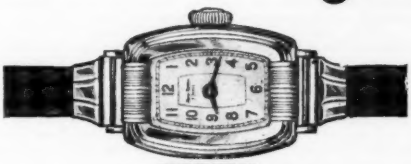
travel suffered a minor dip in the years from 1929 to 1932, while diamond imports plunged alarmingly. Today, the drive is to level off so that diamonds will meet travel in popularity.

7-JEWEL WATCHES

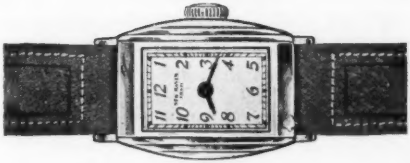
PRICED FOR MASS APPEAL!

"BEK" heavily plated yellow gold cases with curved chrome backs—smart metal dials with etched numerals. 7-jewel temperature-compensated movements.

RETAIL $4.95 TO $6.95



"DUCHESS"



"DUKE"

"COUNTESS"

"COUNT"

Your Jobber Can Supply You

Watch Division
THE NEW HAVEN CLOCK CO.
NEW HAVEN, CONN.

NEW HAVEN
Timepieces

AERONAUTICAL INSTRUMENT SERVICE

Aircraft Instruments

EDITOR'S NOTE—Aeronautical Instrument Service is a subject untouched by publications in the Horological field, or in fact by any publication. In September, 1938, THE AMERICAN HOROLOGIST inaugurated such an educational service via prepared illustrated lectures to be used by U. H. A. A. organizations for the purpose of broadening our members' scope of knowledge in this field, which offered additional remuneration to those far-sighted enough to avail themselves of such knowledge.

As private, commercial, and governmental aviation becomes more and more popular—a greater demand arises for instrument service men. The fundamentals are, first: The knowledge of a watchmaker—then a study of instrument classifications, performance, and service.

THE AMERICAN HOROLOGIST and U. H. A. A. have the whole-hearted cooperation of our government in this work and have encouraged same by making available all necessary data on aeronautical instruments, together with service manuals, etc. The Aeronautical Division of the Army and Navy have sanctioned this work and given manufacturers of such instruments permission to supply needed material with certain reservations. The articles to be published cannot go into lengthy details, however, the classroom lectures are more complete and heavily illustrated, all of which is fully explained in the Aeronautical Slide Section, page 108, of our September, 1938, Service Directory.

Protect yourself and our future by acquiring knowledge available. With the National Association and its Research and Statistical Information on each man, the government will not have to grope in the dark for mechanics and their ability.

Those seeking such appointments, as aeronautical instrument men and other such positions, may secure such information from National Office or through your Secretary for group information.

AIRCRAFT instruments supplement the pilot's judgment, enabling him to operate his engine and controls with the maximum efficiency and safety. Some instruments furnish data useful in military operations. Others are essential to the measurement of performance in the flight testing of aircraft.

The engine instruments (tachometer, thermometer, pressure gauges, and fuel-level gauges) warn the pilot of engine trouble before it can be perceived by his senses. Any change in functioning is usually indicated instantly, giving the pilot ample time to correct the trouble, or, if this is impossible, to find a suitable landing field.

When flying over familiar territory on a clear day, only the engine instruments and those for maintaining an altitude are required. When flying over strange territory at night, or through clouds or fog, safe and efficient flight can be maintained only by relying upon the navigational instruments. In flying through clouds or fog for any length of time, the pilot must depend upon the air-speed indicator, turn indicator, inclinometer, and compass; otherwise, he would lose all sense of balance, become lost, and possibly fall into a spin. In bombing or photographic operations, relying upon the air-speed indicator, turn indicator, and inclinometer gives better results than depending upon the senses.

The type and particular function of an aircraft govern the kind and number of each instrument installed.

Aircraft instruments may be classified in three main groups, according to their use, as follows:

ENGINE INSTRUMENTS — Tachometer, thermometer, pressure gauges, engine gauge, supercharger gauge, and fuel-level gauge.

NAVIGATIONAL INSTRUMENTS—Altimeter, air-speed indicator, compass, inclinometer, turn indicator, flight indicator, clock, statoscope, rate-of-climb indicator, ground-speed and drift meter, manometer.

Statoscopes, rate-of-climb indicators, and manometers are used for navigational purposes by lighter-than-air aircraft; they are used only for test work in heavier-than-air aircraft.

MISCELLANEOUS INSTRUMENTS — Oxygen apparatus, barograph (altigraph), air-speed recorder, strut thermometer, astronomical instruments, gas-leak detector, lift computer, tension meter and instrument board.

Maintenance of instruments. — Unreliable instruments are worse than none at all, as they deceive the pilot and destroy his confidence in all instruments. Instruments on aircraft should be carefully in-

spected at regular intervals to insure that they will always be in working order. The life of aircraft instruments can not be expected to be long, because of the vibration and shocks to which they are subjected; but they will give better and longer service if given proper attention. It is desirable that every airdrome have one or more instrument mechanicians or repair men, as the necessity demands specially trained to look after the cleaning, repair, and calibration of instruments.

Certain instruments should be cleaned and oiled at regular intervals; the turn indicator and the tachometer at least once in three months, and watches or clocks once in six months. All other instruments have parts with slow motion. Thus there is little or no wear. Their cases are tight enough to keep out dust and dirt. Consequently, barring accidents, these instruments do not require much attention. One source of trouble that frequently occurs is the loosening of a screw or part due to vibration. Such a difficulty renders the instrument uselss, but is easily prevented or remedied.

The air pressure, fuel pressure, and oil pressure gauges, and the air-speed indicators may be injured by overpressures, which result in a permanent *set* of the Bourdon tubes or the diaphragms; at least, the calibration will be changed. For this reason, the readings of the instrument should be checked by comparing them with standard or the readings of a manometer as described later. If the errors are not large the instrument can still be used provided the necessary corrections are applied to the readings; but if the errors are large, the instrument should be replaced by a new one, as satisfactory repairing would require new parts. A radiator thermometer can not be repaired if the bulb, tubing, or Bourdon tube develops any trouble. It would have to be refilled, and this would require special equipment and a quantity of the liquid for which the thermometer was designed. If the trouble is in the sector gear, pinion, or hairspring, repairs can easily be made. Since all instruments have been subjected before they are accepted to the tests required by the specifications, new instruments are probably correct within the limits allowed. After considerable use under severe service conditions, the calibration of an instrument may change to such an extent that the readings indicated are quite misleading.

Engine Instruments

Tachometers—The airplane tachometer shows the rate at which the engine crank shaft is revolving; that is, the revolutions per minute. In the case of geared propellers the tachometer may show either engine speed or propeller speed. The tachometer is often erroneously spoken of as the revolution counter or "rev." counter; revolution counters indicate the total number of revolutions made by an engine. The specific uses of the tachometer are to—

a. Anticipate engine failure, the principal use of this instrument. Engine trouble of any kind results in a slowing down in the rate of revolution. Therefore, the tachometer shows quickly and surely whether the engine is working properly. Since an airplane depends on its engine not only for propulsion, but also for actual support or maintenance of level, the importance of such information is apparent. If the engine stops, the airplane must come down, perhaps on bad ground or enemy territory.

b. Adjust the engine to the speed of greatest economy.

c. Reduce wear in cross-country flying. Wear can be considerably reduced by throttling down to a somewhat lower speed than the maximum obtainable. For each particular type of airplane, the best speed must be determined by experiment. It is somewhat greater than the least speed that can be used without loss of altitude. When once it has been determined, the tachometer enables the pilot to set the engine readily at this speed.

Chronometric tachometers—Because of its accuracy and reliability, the chronometric type of tachometer is universally used by the Air Corps. It actually counts the revolutions of the engine during a given period of time, 1 or 2 seconds. The position then taken automatically by the

pointer on a dial indicates the engine speed for that interval. The dial is graduated in revolutions per minute. Levers which are operated by a clock or watch escapement throw a wheel or rack in and out of mesh with the chronometer drive shaft. The turning of the shaft automatically winds the spring which actuates the clock escapement. When in mesh (the counting period), the wheel or rack moves a distance proportional to the revolutions per minute of the shaft. When out of mesh (the indicating period), the wheel or rack is stationary while another wheel causes the pointer to assume the correct position on the dial. Also, during the indicating period, the wheel or rack returns to zero in readiness to repeat the counting operation. During the counting period, the pointer remains fixed, jumping at the end of that time to the correct reading for the period. Therefore, the jerky motion of the pointer does not indicate sudden changes in the rate of revolution, but changes that occur during each counting period.

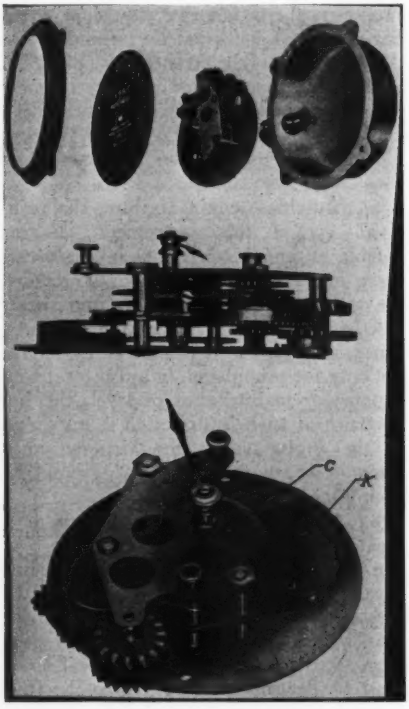


Figure 1—Type C Chronometric Tachometer.

There are three types of chronometric tachometers in use—

The round dial tachometer, types A and C.

The vertical straight-scale tachometer, M1923.

The chronometric electric tachometer, M1923.

Either of the first two is driven by a flexible shaft from the engine. Owing to the breaking and whipping of such a shaft, it is not advisable to use one which is longer than 25 feet. If the distance between the engine and instrument board is greater than this, the chronometric electric tachometer is used.

Detailed Operation of Type C Chronometric Tachometer—This instrument is a simplified and, in some respects, an improved form of the foreign Jaeger tachometer. The complete instrument is shown in Figure 1. The gear which is intermittently connected with the engine for equal intervals of time and measures the speed of the engine is the gear *C*, called the counter gear. *K* is the escapement which regulates the time interval.

Compared with foreign chronometrics, the type C has only one counter-gear, the reversing mechanism is simpler, and the escapement is smaller. The first difference mentioned is a simplification, but necessitates the instrument remaining idle for part of the time. The pointer is set on a square boss and held by a spring

BOWMAN Technical School
Courses for Success for WATCHMAKERS ENGRAVERS, JEWELERS
Write for free book "Your Future and Our School"
JOHN J. BOWMAN, Director
Bowman Bldg., Lancaster, Pa.

Incomparable Watch Case Repairing
OUR WORK COSTS NO MORE THAN ORDINARY WORK
BECKER-HECKMAN CO.
29 E. Madison St. CHICAGO, ILL.

washer to prevent slippage due to the sudden jumping of the pointer.

The mechanism may be divided into: Drive system, escapement-cam system, counting system, and indicating system. The drive system actuates the escapement-cam and counting systems. The escapement-cam system controls the operation of the counting and indicating systems. The motion of the counter-gear is registered on the dial by the indicating system.

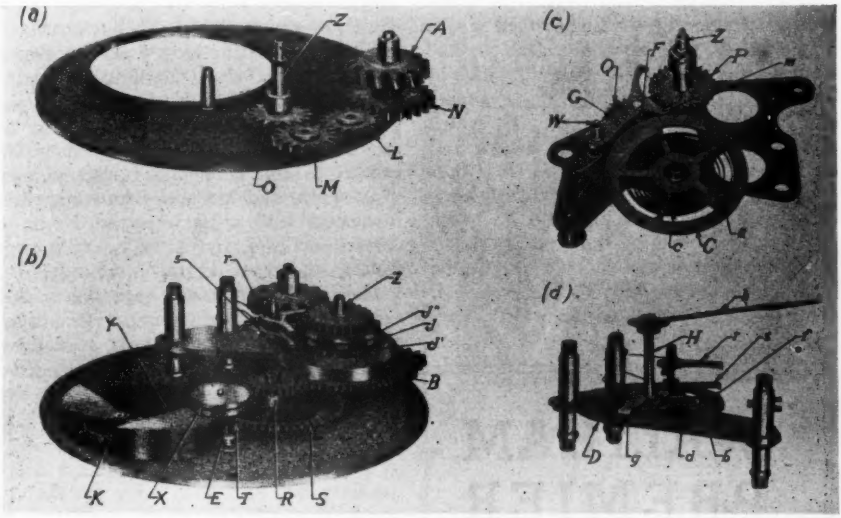


Figure 2—Details of Type C Chronometric Tachometer.
(a)—Drive System. (b)—Escapement-can System. (c)—Counting System. (d)—Indicating System.

The Drive System (fig. 2 (a)) is actuated by the main drive gear *A*. It is composed of the gears *N*, *L*, *M*, and *O*. Its immediate purpose is to drive spindle *Z* to which *O* is fixed and from which the counting and escapement-cam systems receive their motive power. Regardless of the direction of drive, the gears *L* and *M* form a reversing mechanism which automatically provides for a rotation of *Z* in the same direction. This is necessary because the counting and escapement-cam systems operate in one direction only. The method of reversing is as follows: Gears *L* and *M* are mounted on a rocker arm pinned in the center in such a way that when gear *A*, and consequently *N*, rotates in one direction, clockwise as seen in figure 2 (a), *L* meshes with *O*, and *M* idles. However, when *A* rotates in the opposite direction, *M* meshes with *O*. Thus *O* and *Z* rotate in the same direction in either case.

The Escapement-Cam System (fig. 2 (b)) is composed of the cams, *J*, *J'*, and *J"*; the toothed barrel *B*, to which the cams are fixed; the gears *R*, *S*, and *T*; the flywheel *E*; and the double-roller escapement *K*. *B* receives from *Z*, as described below, the motive power for the system. *R*, *S*, *T*, and *E* transmit this power to the escapement, which is driven thereby and allows the entire system, including the cams, to move suddenly at regular intervals. The operations of the counting and indicating systems, which are controlled directly by the cams, thus occur in a definite time order. The releasing is effected by *E* engaging a star pinion *Y*, which is on the same pivot with the escape wheel. *E* has two arms, and rotates through 180° at each release. The force of impact of the fly is lessened by the inertia wheel *X*, which grips by friction the pivot to which *E* is attached. The motion of the system being fixed and that of *Z* variable, a slip drive must be used. This is in the form

of a spring, called the mainspring, coiled tightly inside *B*. The inner end of the spring is fastened to *Z*. *B*, on the other hand, idles on *Z*, and has no rigid connection with the spring. Consequently, as *Z* revolves, the spring slips around in *B*. It exerts on *B*, through the friction caused by its tendency to uncoil, a turning force which drives the system. This force acts instantly when the instrument is started, and continues at all driving speeds.

The Counting System (fig. 2 (c)) consists of the gear *Q*, the fine-toothed pinion *F* fixed to *Q*, and the counter gear *C*. The system is driven by the gear *P*, which is fixed to *Z* and meshed with *Q*. *F* and *Q* are mounted on a rocker arm *G*, which the cam *J* causes to oscillate toward and away from *C* about a pivot *W*. *F* is thus thrown alternately into and out of mesh with *C*. *Q*, however, remains in mesh with *P*. The effect is, therefore, to put *C* successively into and out of connection with *Q* and, hence, with the main drive *A*. This occurs at regular intervals (every second), since *J* has equally spaced teeth and moves at regular intervals. The angle through which *C* is rotated during each second is, therefore, proportional to the speed during that second. *C* is provided with a control spring *c* and a projecting stud *a* on its upper and lower sides, respectively. It is locked and released by the toothed pawl *r*, which is operated by the cam *J''*.

The Indicating System (fig. 2 (d)) is formed by the so-called pointer gear *D*, similar to and below *C;* the pointer spindle *H*, to which *D* is fixed, but on which *C* idles; the floating arms *f* and *g*, pivoted on *H* between *C* and *D;* and the pointer *h*. Locking and releasing of *D* are accomplished by a toothed pawl *s* similar to and directly below *r; s* is operated by the cam *J*. Unlike *C*, *D* has ratchet instead of V teeth, and can move forward while in contact with *a*. It is provided with a control spring *d*, similar to *c*, and a projecting stud *b* on its upper side. *b*, *f*, *a*, *g*, and a fixed stop *m* on *G* are so arranged as to engage each other in the order named. The engaging of *a*, *g*, and *m*

WALTHAM PREMIER

***Watch* Sales Mount!**

SAGAMORE

- Teardrop Design can be worn as a pendant, on a Chatelaine or fob, or as a wrist watch.

LITTLETON

- Smallest and Thinnest Ladies' round wrist watch ever made in America.

All Ways in Fashion

Waltham Watch Company
Waltham, Massachusetts

stops C in a certain position. The engaging of b, f, and a holds C and D fixed with reference to each other. The use of the floating arms f and g, instead of a direct contact of a, b, and m, enables nearly two complete revolutions of D, thus making a full circumference dial possible and insuring the counting mechanism against injury in case of an excessive rate of revolution. When the instrument is idle, the control springs c and d cause b, f, a, g, and m to engage in the manner described above. C and D thus assume definite zero positions.

In the operation of the instrument, C and D are rotated away from m against the force of their control springs by F. This drives C and, hence, D through the engaging of a, f, and b. They are rotated back toward m by their control springs. By means of r, C may be held when out of mesh with F. Similarly s serves to hold D independently of C. C turns back and forth continuously, returning to its zero position at regular intervals. D, however, turns only when a change in revolutions per minute occurs; forward for an increase, backward for a decrease.

If D is not in the zero position with reference to C (that is, the position in which a and b are in contact with f), it will always move back into that position by the action of its control spring when free to do so. The angular deflections of D and h from their zero positions are then equal to the deflection of C, which is proportional to the rate of revolution. So long as the period of the escapement does not vary, the scale of this instrument is uniform.

The cycle of operations is determined by the cams J, J', and J''. At the start, C is in its zero position and unlocked. D and h are locked in the position which they assumed in the preceding cycle. F meshes with C for one second, turning it through a certain angle. According as the speed is, first, the same as, second, greater than, or third, less than in the last cycle, C, first, just reaches D, or second, engages D and pushes it forward, or third, stops short of D. In any case r locks C in its extreme position; s then releases D, allowing it in the third case to assume the zero position relative to C. C is again released, and returns to its zero position. The cycle then repeats itself.

The pointer h follows the motions of D. It is locked in a position that is determined by the rate of revolution during the one second that C and F are in mesh. It then moves forward or backward suddenly by an amount equal to the change in revolutions per minute. Therefore, this instrument, like others of the chronometric type, deflects intermittently, indicating the average rate over an interval of time rather than the rate at each instant.

(Continued Next Issue)

"The Pathway to Success"

WATCHWORK
JEWELRY
STONE SETTING
ENGRAVING

Bradley Polytechnic Institute
School of Horology

DEPT. B PEORIA, ILL.

Established 1886

FRANK KAUFFMANN
1485 3rd Ave., New York City
IMPORTER of the world famous hand carved
CUCKOO CLOCKS
AND ALL PARTS
Write for new price list

Martin Gluck and Son
SUPPLY SPECIALISTS TO THE TRADE
Clark Building Pittsburgh, Pa.

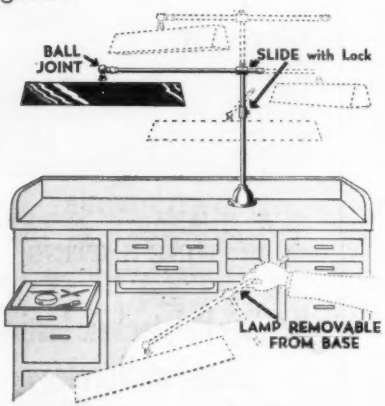
PEERLESS *Fluorescent*

REG U.S PATENT OFFICE

BENCH LAMP

Designed to GIVE DAYLIGHT to the WATCHMAKER and JEWELER

Definitely one of the most revolutionary achievements, for the man at the bench, that has come out of our shops. Using one of these lamps is assurance there will be no more sharp blinding reflections caused by light shining on highly polished surfaces, no more intense heat from large lamp bulbs that were normally used to give the same light quality this 15 watt fluorescent bulb gives.



NOTE: Adjustable Features Found on No Other Lamp

This 18" 15 watt fluorescent bulb gives the light quality of a regular 75 watt bulb. It contains no filament yet gives off a rich glowing light the entire length of its surface, illuminating the complete area of your bench, bringing out the minutest details with startling clearness.

No. 39375. Complete fluorescent lamp, complete with 15 watt bulb, cord and plug. For A. C. Current.

No. 39376. Complete fluorescent lamp, complete with 15 watt bulb, cord and plug. For D. C. Current..... **$9.75**

CHICAGO (2)
Box 7737

DALLAS
DETROIT
LOS ANGELES
NEW ORLEANS
MILWAUKEE
MINNEAPOLIS

C. & E. MARSH

A GREATER VALUE — A

LARGEST AND FOREMOST SUPPLY

- **Occupies less than 3" of space on your Bench.**
- **Casts no black shadows.**
- **Easy on the eyes. Causes no eye strain, can be easily looked at.**
- **Radiates no heat.**
- **Easily adjusted if desired for more concentrated work.**
- **Beautifully finished in Statuary Bronze finish with chromium finished reflector.**

Due to low price, there will be no trade-in value on old lamps.

Marco

HALL CO.

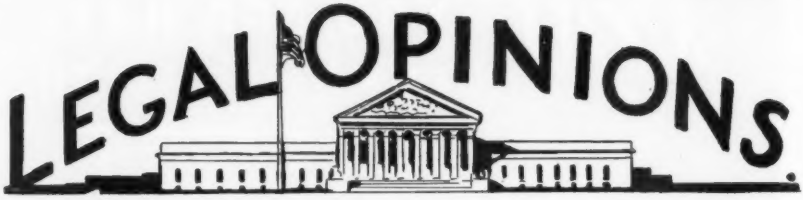
A GREATER SERVICE

SUPPLY HOUSE IN THE WORLD

CHICAGO (2)
Box 7737

COLUMBUS
PITTSBURGH
HOUSTON

KANSAS CITY
OKLAHOMA CITY



When a Dead Man Owes a Jewelry Bill

By Charles R. Rosenberg, Jr.

THAT good customer of yours who pays his bills regularly and promptly! Suppose he dies before he pays his last bill. Could you collect it?

If he was living up to his income or beyond it, spending everything he earned, of course he'll leave no estate—and you will never get a penny of the account. His wife and other relatives who may survive him are not legally obligated, ordinarily, to pay his jewelry or watch repair bills—or any other bills for that matter. If he carried life insurance payable to his wife or surviving children, the law in most states will protect the insurance money from his creditors. Usually the insurance check is paid to the beneficiary named in the policy, and the money never comes into the decedent's estate.

So, the only chance of collecting a dead man's jewelry bill is out of his estate—if he leaves any!

Let's be optimistic and assume that your dead customer leaves a substantial estate—large enough to pay all the bills he owed, including yours. There's still a good chance that you won't collect. You will get your money only if you present your claim to the proper court or official in the form and within the time limit prescribed by the law of the state in which your deceased customer's estate is being administered. Assurances by members of the dead man's family that you will be paid "as soon as everything is settled up" are at best meaningless and may be intended to stall you out of your legal opportunity to collect. If you are a day late or fail to present your bill in proper form, your claim may be precluded. "Precluded" is a fancy legal word meaning "out".

A dead man's affairs are comprised in his estate. The sum of all he owns and the sum of all he owes constitute his estate, which is administered by an executor or administrator. The executor's or administrator's job is to gather in the assets, pay all the debts, and distribute what is left to the surviving relatives and others who may be entitled to it. The executor or administrator derives his authority from so-called letters testamentary or letters of administration granted to him by the proper court or official. Depending upon the law of the particular state, "letters" on an estate may be issued by Register of Wills, Clerk of the Probate Court, Orphans Court, County Court, Ordinary, or Surrogate.

The first step taken by the executor or administrator in practically all states is to give public notice that he has been appointed to administer the estate and that all claims against the dead man may be presented in accordance with the law of the state. This public notice of the granting of "letters" on the estate may be published in local newspapers or posted in specified public places in the community.

With the publication of these notices the administration of the estate is definitely under way. The jeweler to whom the dead man owed a bill must make the next move. His bill is now merely a claim against the estate and if it is to be paid, he must present it in the form and within the time limit prescribed by the law of the particular state.

Some states prescribe no special form for the drawing up of such claims, and in those jurisdictions an itemized statement, preferably sworn to, is ordinarily sufficient. Other states have very rigid

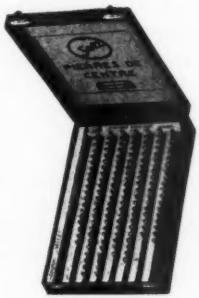
statutes setting forth the form and language in which creditors must draw up their claims against decedents' estates. In such states, of course, the jeweler cannot collect his claim unless it is drawn up in the prescribed form. Sometimes printed forms for this purpose may be obtained from the court or official having charge of decedents' estates in the city or county where the estate is being administered.

While only some states prescribe an exact form for presenting claims against a decedents' estate, all states have time limits within which such claims must be presented. For the most part, the time limits for presenting a claim against a dead man's estate are appreciably shorter than the time limits for bringing suit against a debtor while he is alive. The jeweler with a bill against a dead man, therefore, cannot hope to collect unless his claim is filed with the proper court or official within the time limit set by law in the particular state. Sometimes it is sufficient merely to file the claim with the executor or administrator. In some states, however, the claim must be filed with a judge or court clerk.

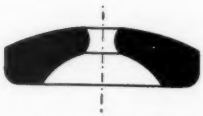
Where the executor or administrator is familiar with the dead man's affairs, he may know that the jewelry bill is correct and "admit" the claim—that is, acknowledge that the bill is true and correct. Ordinarily, this saves the jeweler the trouble of proving his claim. Where the claim is not admitted, however, the jeweler must be prepared to prove it. This may involve proving that the dead man ordered the various items on the bill, that they were duly delivered, and that the prices charged are either those which the dead man agreed to pay or are fair and reasonable prices for the goods purchased.

The proving of a claim against a dead man's estate is not always easy, no matter how legitimate the bill may be. There is a rule of law applied in practically all states which prohibits jewelers and other creditors from testifying to conversations with the decedent in order to prove claims against the estate. Proof ordinarily must be by written orders or records or

"SEITZ" Jewel Assortments Are Practical Combinations!



A complete stock of friction jewels for a small outlay.



Standard assortments

Convex balance olive hole assortments

Assortments of center jewels

TO WHOLESALE ONLY

Bergeon & Company LE LOCLE, SWITZERLAND

the testimony of a disinterested witness to the effect that he heard the decedent give the order orally. The dead man's written approval of a quotation might also serve the purpose.

So, as soon as you learn of the death of a customer with an unpaid bill, take these steps promptly:

1. Go to the office of the surrogate or other local official having charge of decedents' estates and find out whether letters have been granted on the estate, the date of the letters, and the name and address of the executor or administrator;

2. Draw up your claim against the estate in the form prescribed by the law of the particular state;

3. Present your claim thus drawn up to the executor or administrator or official prescribed by state law for receiving claims against decedents' estates;

4. Be sure you present your claim within the time limit fixed by law. The time may run either from the date on which the letters were granted, or the date on which the executor or administrator published notice of the granting of letters, or from a date fixed by court order.

Time Limits for Filing Claims Against Decedents' Estates

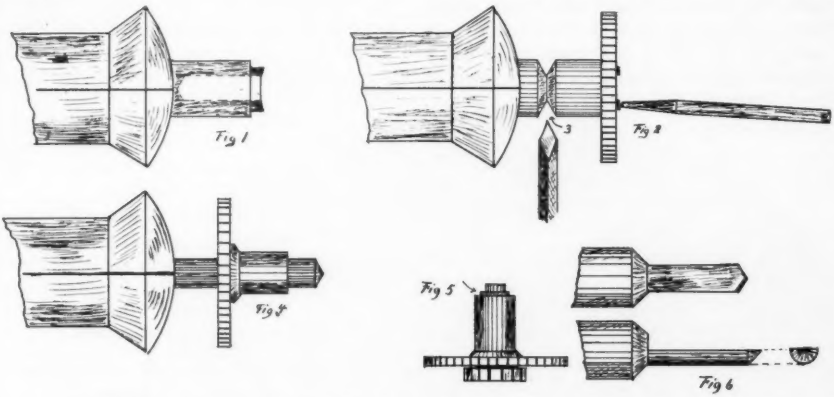
"N"—After the name of a State indicates that the time runs from the date of first publication of notice to file claims.
"G"—Time runs from date on which administrator qualified or letters were granted on the estate.
"C"—Time fixed by court order in each estate.
"L"—Under certain conditions time may be longer than indicated.
"S"—Under certain conditions time may be shorter than indicated.

Alabama—G—6 months
Alaska—N—6 months.
Arizona—N—4 to 10 months according to size of estate.
Arkansas—G—1 year.
California—N—6 months.
Colorado—G—1 year.
Connecticut—G—6 to 12 months as determined by court.
Delaware—G—1 year.
District of Columbia—G—1 year—L.
Florida—N—8 months.
Georgia—G—1 year.
Idaho—N—6 months.
Illinois—G—1 year.
Indiana—N—6 months—L.
Iowa—N—1 year.
Kansas—G—1 year.
Kentucky—G—9 months—L.
Louisiana—G—1 year—S.
Maine—G—1 year.
Maryland—N—6 months.
Massachusetts—G—6 months—L.
Michigan—N—4 to 12 months.
Minnesota—C.
Mississippi—N—6 months—S.
Missouri—G—6 months to 1 year.
Montana—N—4 months—L.
Nebraska—C.
Nevada—N—3 months—S.
New Hampshire—G—1 year—S.
New Jersey—6 months after court order.
New Mexico—G—6 months.
New York—N—6 months—L.
North Carolina—N—1 year but only six months for creditor receiving personal notice from administrator.
North Dakota—N—6 months.
Ohio—G—4 months.
Oklahoma—N—4 months.
Oregon—N—Time specified in published notice, but within 6 months.
Pennsylvania — Any time until court's "audit".
Rhode Island—N—1 year; but claims filed within 6 months have better chance.
South Carolina—G—1 year.
South Dakota—N—6 months—S.
Tennessee—G—18 months.
Texas—G—1 year.
Utah—N—4 months—S.
Vermont—C. Not less than 6 nor more than 18 months—L.
Virginia—G—6 months—L.
Washington—N—6 months.
Wisconsin—C—Not more than 1 year—S.
West Virginia—N—6 months.
Wyoming—N—10 months.

Repairing the Hour Wheel

By W. H. SAMELIUS

We occasionally find a watch where the opening of the hour wheel tube is too large or the opening tapered allowing the hour wheel to rock, making it impossible to adjust the hands so they will clear, even though a dial washer may be used. Dial washers at the best are only makeshift, we never find them applied on new watches.



If we find it necessary to repair the hour wheel (where new material cannot be obtained), the following cuts and suggestions may be helpful to the reader.

Our first move is to drive out the old tube. If the tube and wheel is made from a solid piece, the wheel itself must be held in a wheel chuck that is perfectly true. The tube is cut off and the hole in the wheel enlarged from .2 to .3 mm. (see Fig. No. 1). Then take a piece of brass stock from .2 to .3 mm. larger than the opening in the wheel. Stock is then carefully centered and a hole drilled slightly smaller than the diameter of the cannon pinion. Hole is then broached to the proper size with a straight broach. After the hole is truly drilled and reamed, cut a step, leaving a square shoulder for the wheel to fit on. Let the material project through the wheel from .1 to .2 mm. Before fastening the wheel, the hole should be slightly champhered. The wheel is now ready to be fastened by using a round end burnisher or a round end punch from your staking set (see Fig. No. 2). Surplus material may now be removed flush with the hour wheel.

We next cut the tube off to the approximate length required (Fig. No. 3). We then turn a steel arbor with a very slight taper, to fit the hole in the hour wheel tube, friction tight (Fig. No. 4). The tube can now be cut down to the proper diameter to fit the hour hand, also for length. The length of the hour wheel tube should be such that there will be end shake between the minute hand and the hour wheel tube, usually .1 mm. is ample clearance (Fig. No. 5).

To make a straight broach, cut the steel wire about .02 mm. larger than the outside diameter of the cannon pinion. File a flat side, cutting away exactly one-half the broach, broach may then be hardened and tempered to a light yellow (see Fig. No. 6).

If the workman is equipped with a slide rest, a small boring tool may be used to bore the hole to the proper size, instead of using a broach.

Patronize Our Advertisers

Early American Clock Dials

The duplication, repair or refinishing our specialty Estimates cheerfully given.

J. E. COLEMAN

50 Arcade Bldg. Nashville, Tenn.

Kansas State Horological Association

Will hold its first Annual State Convention in Wichita, October 22nd, place of meeting quarters obtainable through state or local secretaries. During this, our first state convention, it is hoped all watchmakers and jewelers will endeavor to be in attendance. The subject of State Legislation and Watchmakers Registration will be one of our outstanding features. Those in Kansas who are really interested in seeing our state enact such laws should be present and take part in final draft of proposed laws.

The enlargement of our state membership and educational programs will naturally be given ample time and consideration, as our state is destined to overshadow our neighbor state Oklahoma.

Make your plans now for this most important state event. You are vitally affected by the acts of this state association. We want and need you, you need us.

Lancaster County Guild No. 6

Held their first regularly called guild meeting in the Lecture Room of the Bowman Technical School, in Lancaster, Pa., with 23 members attending, showing great enthusiasm in their newly established organization.

The Bowman Technical School, under the direction of Mr. John Bowman and his brother, Charles Ezra Bowman, gave the guild the use of their lecture room and this was graciously accepted by the organization.

Mr. Bowman and his brother are helping this work along in every way possible and will make contributions to the program which they hope will be interesting and further promote the growth of the guild and the state association.

All members, within the jurisdiction—or non-members—of the Lancaster Guild should make arrangements to attend these these interesting and instructive meetings.

Patronize Our Advertisers

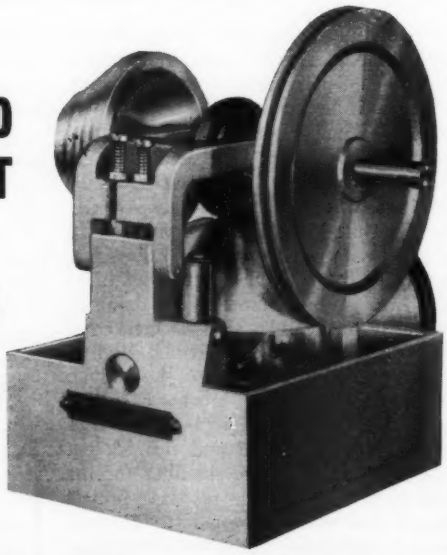
ROGER VARIABLE SPEED COUNTER-SHAFT

With 1/30 h.p. G. E. MOTOR **$32.50**

Rubber Mounted

WITHOUT MOTOR **$27.50**

Prices F.O.B. Oakland, Subject to Change Without Notice



For Further Particulars, write

ROGER MFG. CO.

3432 HIGH ST.
OAKLAND, CALIF.

LONGINES AVIATION WATCHES

The Only Line of Bona-fide Aviation Watches In Use Thruout the Whole World

Available to Jewelers in a Special Assortment

These four Longines aviation watches, useful for every special timing purpose are offered to Longines - Wittnauer agencies as a special "Aviation Watch" Assortment. Here's your opportunity to dramatize the story of aviation watches and make your store headquarters for special timing watches. Included in the assortment (illustrated below) are, left to right: the new Longines stop second watch with fly back second hand, $75.00; the Longines time-out chronograph strap watch, $125.00; the Longines Lindbergh Hour Angle watch, $75.00; the Longines Weems second-setting watch, $60.00.

Enlargement of watch movement of the Longines time-out chronograph strap watch.

Watches shown below are included in the new Longines aviation watch assortment.

The Jewelry Repair Department—Its Relation To the Jewelry Selling Departments

By Col. Wm. H. Bright

EVERY customer who purchases a piece of jewelry expects, and is entitled to, service on each article bought; whether it be a diamond, a watch, or a cheap piece of costume jewelry. All ethical jewelry stores maintain a department with trained personnel to service the merchandise sold, in order to create in the customer's mind the spirit of good will, and to instill confidence in the customer of the fact that should anything go wrong with the purchased article, it will be properly taken care of. To create this good will and confidence in the general public is a task of large proportions. It cannot be accomplished by any unskilled salesperson posing as a jeweler or watchmaker. It must be done by a thoroughly qualified workman who is so skilled that the customer does have confidence in his ability and after the job is completed, it is satisfactory, to the end that the customer is perfectly satisfied. That customer is a booster for the business and is forever a broadcaster of good will. Just the opposite is the customer who is forever being shunted from one counter to another and finally having some unqualified person try to repair the merchandise, only to make it worse. There is an inborn passion in each human being that demands value received in all things. The psychological effect of a customer knowing that if something should go wrong with a watch (for instance) a qualified watchmaker would make it right again, can build more good will and create more confidence with the customer than anything else in the jewelry industry.

To Illustrate

Suppose a customer who has made many purchases in a store should decide to buy a watch. The first step, of course, is that the salesperson use every effort to sell a good one. The customer (we will assume) knows nothing about watches except the looks, and whether or not it keeps time. Most all good watchmakers adjust and regulate the watches before leaving the factory, but any watch may vary when worn by some customers. Suppose the watch gains. The customer will bring it back and expects a watchmaker to explain why it should gain and also to regulate it. The watchmaker can do both, and very often he will find some defect in the adjustment of the watch that he will see in need of attention. Usually he will do whatever is necessary and return it to the customer at once, thereby pleasing the customer. But, suppose a salesperson trys to regulate this same watch. The customer is not at all impressed by having someone work on the watch who does not look like a watchmaker, who hasn't the proper watchmaker's equipment, and who cannot explain the causes. The customer is at once dissatisfied, and after trying out the watch for a few more days, it is still no better and might be worse than before. It is brought back to be treated again as it was on the first time. This has been done over and over again until the customer is disgusted and demands the purchase price returned.

Just a few days ago a customer presented a watch at our repair department that had been purchased one year ago. The customer said that the watch had been back to our sales department eight or nine times during the year, and now that it was five days over the year. The salesperson advised having it cleaned. The watch did need cleaning, but the main trouble with it was that the regulator pins were pinching on the hairspring. This had been the trouble all along and a watchmaker would have known it and fixed it in a very few minutes while the customer waited. This customer would not leave the watch to be repaired and said that it would be the last purchase made in this store. Many other illustrations can be made of practically the same nature. Some worse than the above.

Psychology in business is the greatest

factor to be reckoned with. The psychology of the watchmaker is the greatest factor of the jewelry business. The impressive display of tools, the intelligent manner in which the watchmaker goes to work on a watch, and the ultimate satisfaction received by the customer after the job is done (whether large or small) has more psychological effect on the customer than any other agency in the entire business. Another thing. How pleasing it is to the customer if something goes wrong with a piece of jewelry to be told to "step right over to the repair desk." Much more impressive than having a clerk or salesperson probe around and hand it back with the remark, "I think it will be all right now." The customer could do this himself. There would be no need for him or her to bring the watch in for adjustment if someone was going to do the work on it that wasn't any more qualified than himself.

The customer is entitled to receive better treatment than is now being received. Without the customer we would have no business. To hold the customer, the business must realize that it must give service and service in the jewelry store is the repair department. It is vital and of the utmost importance.

The repair department is of no value unless it is operated to give service and in order to do so it must have a very high standard of workmanship and a personnel of highly skilled people in their chosen field. A watchmaker must have had many years of skilled training before he is to be classed as a good watchmaker. This is a profession that cannot be faked. Many so-called watchmakers *have* sifted into the industry, who have done more damage to fine timepieces than would have been done had the customers been properly instructed by the salespersons who sold the watches. So again the sales department is depending on the repair department and the repair department on the selling department. Both must be in close cooperation at all times to increase customer's good will and confidence.

USE A WIG WAG

Smoothening and polishing scored pivots is a real pleasure with a wig wag. The work is done quickly and correctly. It saves materials. The smallest of pivots can be worked on safely.

Wig Wag, Guide, Bottle of Compound and a Life-time Hone 2"x 8"x¾". Total for $3.00.

Wig Wag	$0.75
Guide	.75
Compound	.50
Hone	1.30

Wig Wag Blank, formed, less handle, **$0.50**

HAROLD SABRO

6335 S. E. 19th Ave. Portland, Oregon

Acids Will Corrode the Pivots . . . Eat the Metal and Cause No End of Trouble in a Watch

FULCRUM OIL

is positively the only lubricant ever produced for watches and clocks that is

ABSOLUTELY FREE FROM ALL ACIDS

This Is a Broad Statement But We Can Prove It.

All Material Jobbers Supply Fulcrum Oil

Fulcrum Oil Co. Franklin, Pa.

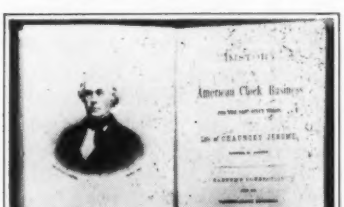
"The Early American Clock"

By J. E. Coleman

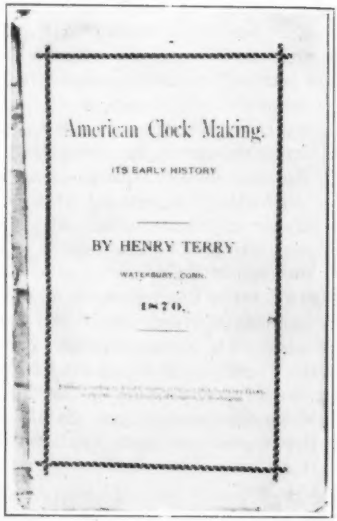
THE average horologist at the bench pays little or no attention at all to the wonderful historical background that lies back of our profession, I often wonder that if we gave more thought to this angle, mentioning interesting facts and dates to our friends and customers if the profession of repairing timepieces—Horology—wouldn't be more rapidly raised to that high plane upon which we are always so quick to say it rightfully belongs.

Consider the doctor, the musician, the lawyer, the optician and others, how much of their education time is devoted to their particular historical background, and watch how they use it in their business and everyday lives; while we, who have the oldest and richest historical background of them all, ignore it.

To us, here in America, the most interesting phase of horological history is the progress and growth of watch-making and clock-making of Colonial days; many of these timepieces, especially clocks, are in service today. They are in the homes of friends, upon the shelves of antique dealers and last, but not least, come over our counters for repairs. For these and many other reasons, accurate facts, dates and interesting stories of Early American Clocks and Their Makers appeal to the repairman, dealer and owner alike. The American Horologist has planned a series of such articles; they are to be run from time to time, provided reader interest shows that the consumption of space is justified. Of course we shall stress the mechanical construction and repair angle, and bring in the historical data secondly.

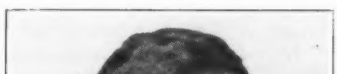


Jerome's Book



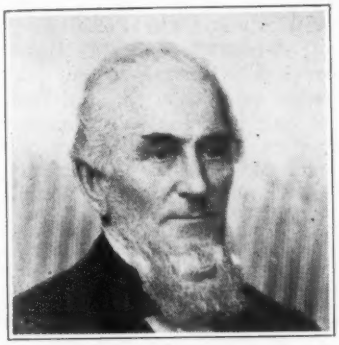
Terry's Book

Under the title of "The Romance of American Clockmaking," Mr. Thomas H. Armsbee says: "By searching old newspapers and records, a list of American clockmakers from the early days down to about 1860 has been compiled, which



Henry Terry

numbers eight hundred and fifty-two individuals and companies. Some of these are only slight variation in name, but again names of clockmakers which I know were in business during the period are omitted, so it is fair to consider that



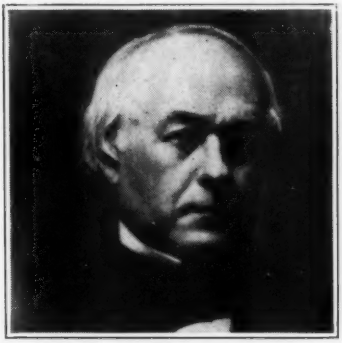
Hiram Camp

eight hundred and fifty closely approximates the number of American clockmakers in business for themselves prior to 1860.

A close study of the record will show that of this 850 only two came before the year 1700—for the next 50 years, 1700 to 1750 there was but 22; from 1750 to the revolution, 1776, 25-year period, there were 43 more, and from 1776 to 1860 there was 785. A grand total of 852. Out of all these, only three have left us a written history of clockmaking. Only three men who helped to establish this great industry saw fit to take time out and write for us a description of the clockmaking as they actually lived through it.

The first was Chauncey Jerome. In 1860 he published a small volume of 144 pages which he titled "History of the American Clock Business for the Past Sixty Years and the Life of Chauncey Jerome Written by Himself." In the preface to his book, Mr. Jerome has this to say: "The manufacture of clocks has become one of the most important branches of American industry . . . it has grown from almost nothing to its present dimensions within the last thirty years. . . . Its whole history is familiar to me, and I can not write my life without having much to say about 'Yankee Clocks,' neither can there be a history of that business written without alluding to myself. A history of the great business of clockmaking has never been written. I am the oldest man living who has had much to do with it, and am best able to give its history." New Haven, Conn., Aug. 15. 1800.

Ten years later — 1870 — Mr. Henry Terry, second son of the famous Eli Terry, published a small pamphlet at Waterbury, Conn., entitled "American Clock Making. Its Early History." Later—March of 1885—Mr. Terry added a page and a half appendix to his pamphlet. Just eight years to the month after Mr. Terry added to his booklet—March, 1893—Mr. Hiram Camp who had retired as president of the New Haven Clock, in 1892, wrote a history which he called "Sketch of the Clockmaking Business." He begins with this paragraph: "Having been brought up in the same town (Plymouth) in which Mr. Eli Terry and Seth Thomas lived, who were the most noted clockmakers in their day, and having been in the business myself for over sixty years, I can give



Chauncey Jerome

from memory something of the business." Then follows a paper somewhat longer than Terry's 19-page pamphlet, but quite short of Jerome's 144 pages. Mr. Camp gives more details of the actual manufacturing operations and the tools and machinery used than either of the others.

The Camp history was not published. It lay hidden in the files of the New Haven Company for 43 years and was discovered in March, 1936, by Mr. Phillip E. English, present secretary of that company. Mr. English is an enthusiastic student of American Clockmaking History; he is the third generation to serve his present company and the family span covers 86 years of clockmaking, he immediately realized the value of his find and supplied a copy of it to The Clock Manufacturers Association who made mimeograph copies and distributed them to organizations and individuals especially interested. We must necessarily look to these three writers as our highest authority, for they not only lived through that formative period, but, they made both clocks and history then recorded it for our information and guidance.

(To Be Continued)

A new Affiliate

"The Horological Guild of Roanoke, Virginia."

During the month of September our guild was formed and applied for National affiliation.

We are proud to be the first affiliated group in Virginia and intend to avail ourselves of the educational, entertainment and fraternal aids.

Officers of the guild are:: President, Albert W. Ridley; Vice President, E. B. Setzler; Secretary, Jack M. Hostetter; Treasurer, J. William Ferguson.

Meeting are held on the third Wednesday of each month. All watchmakers in South West Virginia are invited to contact Jack M. Hostetter, the secretary, at 1626 Rorer Avenue, Roanoke, Virginia.

Watch November Issue

For unusual activities and ideas in Pennsylvania and Worcester, Mass., as well as news notices which arrived too late for insertion in October issue.

FOR SALE

1x2 Mosley Slide Rest. Clement Jeweling Caliper, W. W. Wheel Cutter, W. W. Universal Head. Tools to order. Lathes repaired. Gears, wheels, etc., for any watch or clock. Address Box 674, The American Horologist.

IN THE SPOTLIGHT

NEWALL

"QUALITY"

FINDINGS

14K 1/20th

Seamless Gold Filled

JUMP RINGS

ASSORTMENT No. 753

36 Dozen

1 Dozen Each of 9 Sizes

Round and Oval in both Yellow and White for $5.00

Sold by All Watch Material Supply Houses

The Newall Mfg. Co.

CHICAGO

Horological Association of Missouri

Formerly Master Watchmakers Association of Missouri

Held their first called State Convention in Jefferson City, Missouri, at the Central Hotel, September 10, 1939.

Walter I. Betts, State President

During this first called convention the name of the association was changed, as indicated. Adoption of new by-laws, and a change in dues also took place. The yearly dues starting January 1, 1940, will be $4.00 per year, which cover State and National dues. Guild dues are established by the respective guilds separately.

Officers and directors elected for the ensuing year are as follows: Walter I. Betts, President, of Independence; C. M. Wolff, Vice President, of St. Louis; Theo. W. Kamp, Treasurer, of Moberly; Joe

Some of the Boys at Recent Convention

Obmann, Secretary, of St. Louis. Directors for two years: Chas. R. Percival, of Thayer, and Ernst Wetteroth, of Kansas City. Directors for one year: John Kruse, of St. Louis, and C. D. Holt, of Jefferson City.

The state adopted the Pennsylvania by-laws with small changes.

Various committees were appointed, who will make their reports at the next state convention.

Membership increased during the convention.

The convention was made a success through Mr. Abe Blieden as well as other members living in Jefferson City.

Ray Gable, St. Louis Guild President

Worcester and Worcester County Guild

First meeting of the Fall season of Guild No. 2, Massachusetts Horological Association, was held in the Chamber of Commerce last night with Clifford N. Barton, president, presiding. A report on a Summer clambake was given by Raymond Perreault and Henri LaVenture, co-chairmen. Paul C. Tasse was named chairman of entertainment for the next supper meeting, to be held in Hotel Aurora, Monday, October 2nd.

Cosley Jewelry Company

Wholesale Dealers of
Jewelry, Tools and Jewelers' Supplies, Findings, etc.

301-302-303 University Building

Denver, Colorado

CLOCK DIAL REFINISHING

We specialize in duplicating, restoring and refinishing clock dials of every description. Metal, Wood, Glass, Porcelain, Antique or Modern. Glass Paintings for Early American Clocks. Send for Price List

Est. 1924

EDWIN B. BURT COMPANY

6 Loring St. Auburndale, Mass.

47th Meeting of the Columbus Watchmakers Guild

The first Fall meeting of the Columbus Watchmakers Guild was held Monday evening, September 11th, at Fort Hayes Hotel. When the meeting was called to order by our President, J. W. Finley, there were fifteen active members, five associate members, and several guests present. It is a great satisfaction to see greater interest being taken in the organization and its work.

After the reading of the report on the annual picnic, held in July, the floor was turned over to the technical committee who gave a brief outline of the work they have prepared for the coming year. It was voted by those present that thirty minutes of every meeting be devoted to technical discussions.

Mr. L. W. Heimberger, state president, announced the state-wide meeting and dinner to be held in Columbus, Sunday, September 24th. This dinner is to be in honor of that grand old man who has done so much for the organization, Mr. W. H. Samelius of the Elgin Watch Co. The state organization plans to present a solid gold honorary membership card to Mr. Samelius at that time.

Refreshments were served after the meeting was adjourned.

T. J. FRANCE, *Sec.*

New York State Student Watchmakers Guild No. 1

Freshman and senior students of the Horology Department of the Morrisville State School have once more resumed their studies under the instruction of George J. Schlehr.

The nine seniors returning are: Eleanor Calvert, Harry Campbell, Edwin Harland, Kenneth Doersch, Clifford Johnson, Orville Mesler, Stuart Mitchell, Lynn Robinson and Kenneth Sheldon.

Eight new freshman were added: Ross Dunham, Syracuse, N. Y.; Cedrec Freeman, Boonsville, N. Y.; Norman Hall, Chateaugay, N. Y.; Evert Lawrence, Hornell, N. Y.; Charles Ten Eyck, Johnstown, N. Y.; Russell Walsh, Syracuse, N. Y.; John Wasala, Rochester, N. Y.; Howard Tompkins, Mohawk, N. Y.

These eight new students were selected on a merit basis. From the 56 applications received, 10 were selected. From this group of 10, 8 were given preference. These eight new students are of course eight prospective members for the student guild.

The summer saw many changes around and about the Horological Department. A showcase, to be filled with exhibits of horological interests, has been placed near the door to the laboratory. Each student is expected to take his turn over the counter, meeting any callers to the shop. This "across the counter" training has been instituted to make the course more complete. Each student will not only know how to do the job but he will also know how to accept and deliver the job across the counter to a customer. This ability to meet the customer is just as important as mechanical training.

The first meeting of the year was held September 12th. A general program was given of what is to be done for the coming year. Work on the Graham Dead Beat Clock, as a guild activity, is to be continued. The guildsmen expect to finish the clock this year. Students of last year finished many parts and they found it an interesting and educational activity of the guild.

Sunday, September 17th, the student guild will join the Utica, Albany, Buffalo, Binghamton and Syracuse guilds in a picnic at Gilbert Lake State Park near Cooperstown, N. Y. This gathering will fill the entire day with speakers, baseball game, etc. Summed up, it will form a means of getting acquainted with brother watchmakers. This acquaintance is first among steps for co-operation.

Indeed, the student guild and the department look forward to great things for this year.

ORVILLE MESSLER,
Judicial Guildsman.

LANDAW BROTHERS
Watch Material and Jewelers' Supplies
406 Clark Building, Pittsburgh, Pa.

INTENSIVE CHRISTMAS CAMPAIGN CLIMAXES ELGIN'S 75TH ANNIVERSARY DRIVE

Holiday Ads to Capitalize on Dynamic Personalities in New Way. Variety of Resultful Tie-in Material Offered

A colorful "three-in-one" mailing of Elgin plans for the Christmas season will soon be in the hands of jewelers throughout the country, according to a recent announcement from the Elgin National Watch Company. The first section of the packet is devoted to the special campaign exclusively in support of Lord and Lady Elgin. Section number two, concerning the regular and De Luxe Elgin line, spreads the good news of Elgin's tremendous coverage through the nation's best-read general and women's publications. And section three contains a brilliant array of powerful promotion material to aid jewelers in capturing their full share of the Christmas watch business.

In November and December Elgin magazine messages, concentrated at season's peak, will carry Elgin watches right into the homes of millions of American families. The exceptional values in the new Elgin 75th Anniversary timepieces will be emphasized. These ads will appear almost exclusively in full color.

Elgin employs a new "angle" in its use of fascinating personalities in these ads. For not only will these outstanding personalities be attractive young men and women in whose families Elgin has been a tradition for generations, but they discuss their ownership of a specific Elgin model. And in every instance this watch will be one of the newest which jewelers will be pushing at the Christmas season. Such a plan offers an unusual opportunity for effective tie-ins.

Elgin promotion helps for dealers this Fall include reproductions of the December color advertisements, free newspaper mats, colorful Christmas folders, full color postal cards, radio commercials, an entertaining, hard-selling movie trailer with sound, and other advertising helps.

War Talk Prompts Southern Grandma to Buy Watches

Says "Don't Deliver 'Til 1954"

A Montgomery, Alabama, Grandma of some 60 years old recently walked into the Montgomery jewelry store of Ruth & Sons and said, "Let me see some watches." She looked awhile and then chose four, one a Hamilton and three of another make, and then upset the whole day at the store by saying to the clerk, "Deliver them please—but not until March 8, 1954."

Of course, the clerk asked for an explanation. And he got it. It was this way: Grandma has four grandchildren and they are very young, the oldest being but five. And, "Things are very uncertain now," she said. "I don't know how long I'll be here and there's so much talk of war and trouble. Anyway, I wish to leave the children something fine as a remembrance from me, and I think watches are appropriate and they'll keep for a long time."

Assuring her that the watches would be secure indeed in their flint-walled vault, the clerk carefully oiled and wrapped each precious watch in chamois skin before Grandma's eyes. He told her, too, that the watches would be ready for delivery at the appointed date because the vault is safe even against AIR RAIDS.

HAMILTON WATCH COMPANY SUES FOR UNFAIR COMPETITION

Request for an injunction charging $200,000 damages for unfair competitive practices and trade-mark infringement has been filed by the Hamilton Watch Company against the Hamilton Chain Company, Young's, Inc., S. & S. Manufacturing Co., Mr. Alfred Spear and Mr. Louis Susskind, in Rhode Island.

Hamilton Watch was recently successful in obtaining cancellation of the defendants' registration of the trade-mark "Hamilton" by the Patent Commissioner.

It is alleged in the complaint that the Hamilton Chain Company was formed in 1937 for the purpose of deceiving and defrauding the consuming public by exploitive use of the trade mark "Hamilton," established over a period of many years by the Hamilton Watch Company. The complaint also alleges that the trade-mark "Hampden," registered by the defendants, is misleading to the buying public because of its similarity in sound and appearance to the trade-mark "Hamilton."

As a further point, it is alleged that the defendants incorporated under the name Stetson Chain Company, in 1937, with similar fraudulent intentions regarding the trade-mark "Stetson" established by the Stetson Hat Company. The U. S. Patent Office has also cancelled the defendants' registration of that trade-mark.

The request calls for permanent injunction against the use of the trade-marks "Hamilton" and "Hampden," a complete accounting of profits derived from the use of these trade-marks, and an amount equal to three times the damages sustained by the plaintiff.

NEW MERCURY LIGHT HAILED BY WATCHMAKERS

Swartchild & Co., who have made available to watchmakers the scientific miracle of fluorescent "daylight," report enthusiastic acceptance of their new lamp by Horologists everywhere.

In a display of Mercury Vapor Illumination, in Chicago, some comparisons were shown that were very interesting to watchmakers. Two lamps, one a Triumph Watchmakers Bench Lamp containing a 15-watt mercury tube, and the other a lamp containing a regular 15-watt incandescent bulb, were placed side by side on a large table. The mercury tube produced a powerful, diffused light, almost like daylight and in sufficient volume for fine close work, while the 15-watt ordinary bulb was too dim for use at all on the bench.

A 2-Way Profit-Builder

REDUCES WATCH REPAIR COSTS
INCREASES PATRONAGE

Produces chart records showing how much any watch is gaining or losing in any position in 24 hours; also the cause of irregularity.

---ALL IN 30 SECONDS

Watch Master

American Time Products, Inc.

580 Fifth Avenue **New York, N. Y.**

Distributor Western Electric Watch-Rate Recorders